Understanding the main drivers of value creation in an open innovation program

Rubén Herskovits · Mercedes Grijalbo · Javier Tafur

Abstract Innovation has been identified as the single most relevant element in fuelling corporations' competitive advantage and ultimate value creation. Corporations no longer rely on a single, linear structure of innovation; the new paradigm of open innovation opens up new possibilities of organizing innovation within the ecosystem, thus giving rise to new drivers for value creation. These value drivers have an impact on the strategic position of the firm and have the ability to create superior financial performance. In this paper we explore the close relationship between open innovation and value creation and propose a framework to analyze this process as well as the most critical elements involved.

Keywords Open innovation · Value creation · Value drivers · Value-based management · Corporate venture capital

Introduction

Innovation is a critical element that determines a corporation's ability to create value over time. It is not surprising to see the amount of effort and commitment that the corporate world has dedicated to identifying streams of innovation that fit corporations' objectives, corporate strategy and culture. Over the last decade, the single-company

R. Herskovits (✉) · M. Grijalbo
Department of Industrial Organization, Business Administration and Statistics, School of Industrial Engineering, Universidad Politécnica de Madrid, Madrid, Spain
e-mail: rherskovits@etsii.upm.es

M. Grijalbo
e-mail: mercedes.grijalvo@upm.es

J. Tafur
Department of Industrial Organization, Business Administration and Statistics, School of Space and Aeronautical Engineering, Universidad Politécnica de Madrid, Madrid, Spain
e-mail:javier.tafur@upm.es

linear model of innovation has been seen to evolve (Berkhout and Van Der Duin 2007) towards a more open innovation paradigm (Chesbrough et al. 2008).

The phenomenon of open innovation began with a small group of companies in the high technology sector (Gassmann et al. 2010) and is now spreading to other sectors of the economy. Open innovation tends to develop under conditions of technological complexity and market uncertainty (Sandulli et al. 2012). Also, recent research shows that there is some evidence of differences in technology adoption behaviors across similar companies within the same sector (Nisar et al. 2013).

Around 70% of European corporations claim to have an open or semi-open attitude towards innovation (Schroll and Mild 2011). This situation is reshaping the traditional vision of strategy that originally showed a clear focus on building barriers towards a more collective way of developing and sharing knowledge as a means of value creation (Chesbrough and Appleyard 2007). In other words, innovation should not be limited to the internal forces of the corporation; it should include suppliers, customers and other key contributors (Hax and Wilde 2003) of the ecosystem.

There is mutual influence between innovation and business models. Recent research has identified a direct relationship between business model change and the degree of innovation (Cavalcante et al. 2011). At this point we would like to mention that, although most of the work in this field has been done for corporations, some authors have directed their research efforts towards SMEs, for example, to study a company's ambidexterity (Chang et al. 2011) or innovation as a challenge in people management (Hotho and Champion 2011).

In this paper we intend to explore the relationships between an open innovation program (OIP) and the different value drivers involved. We first identify the various levels and elements present in an OIP then describe how they influence value drivers. Finally, we describe the relationship between these levels and elements, thus developing a general framework of reference that explains their interactions. As a summary of this work we present a framework that integrates the most relevant elements of an OIP and the value drivers identified. This framework is displayed in Fig. 1.

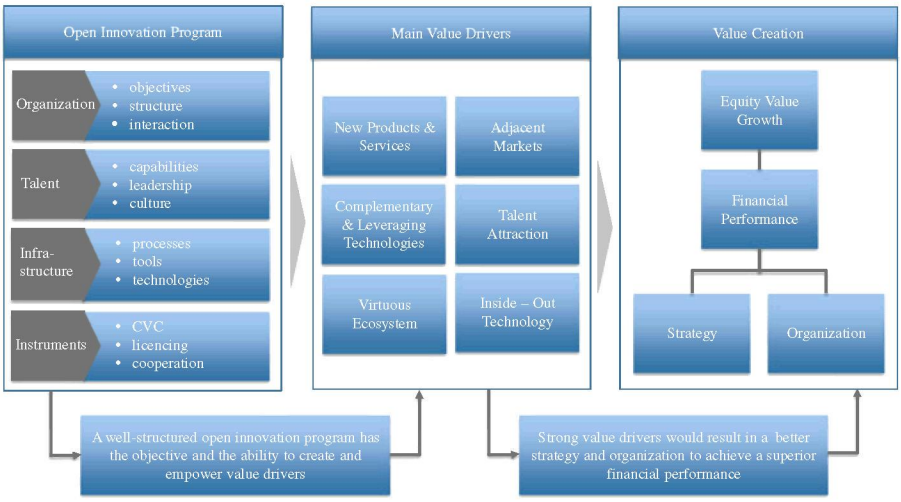

Fig. 1 Framework for open innovation and value creation

Conceptual framework

During the rise of the new paradigm of open innovation over the last decade, several accomplishments have been achieved. However, an area where the academic community still has room for further contributions is in making generalizations derived from the case studies published from experiences in different sectors and geographies. Lessons learned from early adopters of open innovation cannot be applied in all circumstances (Huizingh 2010). It is therefore important to continue with efforts to obtain generalizations. Along these lines, this research aims to present a general framework to explain the close relationship between open innovation and value creation.

To achieve this objective we began our study with a thorough review of the academic and corporate literature. Then, we developed a framework that was contrasted with the views of corporate decision makers in the field of open innovation through a series of open interviews. Finally, we adjusted our framework, with their input, to produce a useful tool for corporations interested in developing and managing open innovation.

Given the ever-increasing interest in this field by the corporate community, we intend to continue this research to identify the best alternatives for managing value drivers in order to achieve a successful OIP in terms of value creation.

Open innovation programs

In this section we briefly describe the various elements present in a typical OIP from the perspective of value creation. Corporations with an open attitude towards searching for ideas outside the firm have a greater chance of exploiting broader and better innovation opportunities (Laursen and Salter 2005). Thus, there is evidence, from a developing country (Peru), that corporations involved in open innovation achieve higher sales growth (Chaston and Scott 2012). It is clear the international scope that an open innovation approach might acquire, as well as the differences in the approach when dealing with developed as opposed to developing countries (Idris and Tey 2011).

We want to start by emphasizing the distinction between an OIP and isolated open innovation initiatives. An OIP combines several unique characteristics. The most relevant of these features is the full recognition and support within the corporation at all levels of decision making. Based on the existing literature, as well as open interviews, we identified the most relevant elements of an OIP. We grouped them into four different levels based on their common characteristics.

The first level that we identified is *Program Organization*. The formal existence of this level is a key differentiator between an OIP and isolated open innovation initiatives. This level is formed by the main elements of the organization of the program such as its objectives, mission, values, etc. However, this level also includes the organizational structure and the mechanisms for interaction between the program and the rest of the corporation, as well as with the other participants within the ecosystem. The importance of a flexible, dynamic organization is paramount since an OIP generally enjoys relationships with several partners simultaneously. This organization is key because senior managers involved in OIPs need to ensure that new ideas reach the employees within the organization who are better positioned to exploit them (Whelan et al. 2011).

Second we identified the *Internal Talent* present in an OIP. The role of individuals in the success of an OIP has been widely acknowledged (Chatenier et al. 2010). Also, leadership was found to have a strong influence on innovation, and such behaviors, either transformational or transactional, can be beneficial in promoting innovation (Vaccaro et al. 2010). The major requirements for embracing open innovation are convincing senior management and changing the corporate mindset to embrace an open innovation culture (Nakagaki et al. 2012). It is clear that employees' attitudes towards open innovation form a key element of an OIP; open innovations work best when employees collaborate side by side (Chesbrough 2012). Depending on the specific characteristics of a corporation, it will follow a specific path towards open innovation and the development of the capabilities required (Ibakalyar 2011) for a successful program.

Third, we have identified the *Platforms and Infrastructure* present in an OIP. We include here the set of processes, tools, technology, communication protocols, labs, legal coverage, etc. These elements are particularly important because they enable the integration of external partners inside the corporation's innovation process. Through a series of case studies, research has shown that there is an important role for infrastructure as well as different models to implement it (Minshall 2011). Also, the culture of the company would determine the degree of formality and use of these elements. Furthermore, the collective expertise would also influence the use and relative importance of these elements.

Finally, we identified the different *Implementation Instruments*. An OIP could be implemented through a series of different instruments; it incorporates ideas such us customer input, open-source projects, patent acquisition, external insights, supplier integration (Muller et al. 2012), and a long list of other instruments. These instruments do not compete between themselves. Instead, they are complementary and it is actually believed that they leverage each other; corporate venture capital (CVC) investments on innovations work better when combined with other instruments (van de Vrande et al. 2009). Although the above-listed instruments all serve the same purpose they have different characteristics and each one is suited to a specific situation. A large number of studies (Narayanan et al. 2009) have been performed to understand the relationship between CVC and value creation.

Given the growing interest in CVC as a particular instrument, it deserves a special mention. Even though CVC is a relatively new approach (Dushnitsky and Lenox 2006; Maula and Murray 2001), it has gained sufficient traction to achieve a relatively high penetration among Fortune 500 companies (Narayanan et al. 2009), and is expanding from the high-tech environment to other more mature industries (Chesbrough and Crowther 2006). Research has shown that external market conditions influence both the financing and the organization of CVC (Fulghieri and Sevilir 2009).

The innovation aspect of most OIPs gives such programs the ability to influence a larger set of value drivers. In the following section, we explore these value drivers in more detail.

Value drivers

Having described the main characteristic, levels and elements of an OIP we can now focus on their impact on value drivers. Some of the value drivers identified are not

exclusive to open innovation, but some are. A review of the academic literature and the different case studies has revealed the following drivers of value creation.

New products & services development

The most direct value driver of an OIP is the ability to create new products and services to offer to the existing client base. This product development activity can be further categorized by taking into consideration the degrees of novelty that the new products introduce into the marketplace; they may be completely new products or incremental modifications of existing products. The relationship between innovation and new products within a strategy development framework has been studied by several authors and approaches including the Delta Model (Hax and Wilde 2003). Only under an open innovation paradigm can corporations discover a new combination of product features (Almirall and Casadesus-Masanell 2010) that would appeal to their customers.

These products or services are the fuel that maintains or improves the corporation's presence in the market. A strong positive relationship has been found between innovation speed and radical innovation (Goktan and Miles 2011), thus determining the lack of trade-off between innovation and time to market.

Access to adjacent markets

Another clear value driver is the opportunity to access markets that are adjacent or close to the core business (Napp and Minshall 2011). An OIP can integrate the various elements necessary to explore and participate in new markets. An adjacent market is not only limited to the geographic dimension; it is better understood from the customer's perspective. An improved value proposition from a customer-centric innovation could open up new market opportunities (Lindic and Silva 2011). The decision of a corporation to enter an adjacent market can be derived from a new competitive advantage arising from an OIP. The rapidly changing technological environment continuously reshapes the boundaries of the markets creating new opportunities over time.

Availability of complementary and leveraging technologies

The availability of technologies is, in itself, a value driver that can be used either to complement or leverage (Napp and Minshall 2011) existing technologies in the corporation. CVC investments give incumbents a window into emerging technologies and can achieve superior value creation when CVC introduces new technology (Dushnitsky and Lenox 2006).

We believe this is an independent driver because technologies can have other uses besides creating new products or services as described in the previous section. In some cases technologies can be used to complement those products and services or even modify the overall customer experience. Innovation design can provide new meanings, not only to the products or services, but also to the different building blocks of the corporation (Battistella et al. 2012). Thus, it is not surprising that technological knowledge also contributes to the corporation's ability to identify new opportunities (Siegel and Renko 2012), ultimately contributing to value creation.

Virtuous ecosystem participation

A less explored value driver of OIPs is the creation and contribution of a virtuous ecosystem in which several key players of the market participate. In this environment, actions of one participant have an impact on value creation for the other participants. As an example, we can cite the case of Deutsche Telekom who embraced open innovation a few years ago through a series of initiatives (Rohrbeck et al. 2009) and created an ecosystem that attracts other corporations operating in the market. Another example involving an SME in Taiwan is the case of TEBSCo, which is an eBook consortium. In the process of creating value for its members, TEBSCo also creates value for non-members and vendors (Huarng and Yu 2011).

The challenges of open innovation not only depend on magnitude but also the position within the ecosystem in relation to the focal firm (Adner and Kapoor 2010). Finally, there is evidence of a positive relationship between CVC and an increase in a company's patents (Dushnitsky and Lenox 2006), which reinforces the contribution of CVC in a firm's innovation strategy. It is also relevant to mention that there is evidence of a learning curve in corporate venturing. Corporations with an active participation in this field tend to create higher returns from the start-up phase (Benson and Ziedonis 2009). Along these same lines, the effects of the experience curve are expected to increase its relevance in terms of value creation under an open innovation paradigm (Reed et al. 2012).

External talent attraction

Corporate culture has been found to be a key determinant of innovation strategy. A hierarchical culture promotes imitation while a adhocracy culture promotes innovation (Naranjo-Valencia et al. 2011). The introduction of an OIP in a corporation brings the opportunity to interact with other organizations and their talent, and to shape the corporate culture. By definition, open innovation represents the recognition that not all the best talent is found in a single corporation (Chesbrough and Crowther 2006), thus demonstrating the advantage of working with other participants within the ecosystem.

An OIP could result in a large increase in sales (Lichtenthaler et al. 2011) but this particular set-up could also help the corporation to attract talent eager to work in an open innovation environment, thus reinforcing the positive loop. It has been found that talent networks are also very relevant for producing a positive impact on OIP performance (Whelan et al. 2011). Open innovation works best when people collaborate and move from one organization to another (Chesbrough 2012).

The possibility of creating positive synergies between talent and innovation is very powerful. One particular study has revealed that when proceeds from IPOs are strategically allocated to talent and innovation, corporations are more likely to reach their growth ceiling (Welbourne et al. 2012).

Inside-out technology opportunities

Open innovation has been defined as a two-way interaction between the corporation and the ecosystem. An OIP can integrate external innovation from within the corporation but

can also *export* innovation to the ecosystem. Most of the attention has been directed towards the Outside-In process. All the previous drivers make reference to the Outside-In process that facilitates the introduction of new technology into the corporation. The Inside-Out process is also part of an OIP and is a value driver because other organizations might be interested in adopting external technology as well.

As an interesting example of the Outside-In driver, we can refer to the emerging attempts to leverage government data (Lee et al. 2012) within the ecosystem. Having an open and ongoing relationship with the rest of the ecosystem could increase the ability to make unused technology available for the rest of the market. In this environment, intellectual property does create value by allowing other firms to license it (Chesbrough 2012). Small but growing venture capital firms are starting to appreciate this opportunity and are specializing in this type of venture (Chesbrough and Garman 2009).

The first three value drivers identified are closely related to customers and they could have a relatively high impact if they affect the clients from the core business. A telecommunications company, for example, could achieve massive value creation if a contribution from an OIP gets converted into incremental ARPU of their existing clients.

Value creation

Value creation over time is the ultimate objective of all corporations. Value Based Management has been defined as 'a management philosophy, which uses analytical tools and processes to focus an organization on the single objective of creating shareholder value' (Condon and Goldstein 1998). Since the traditional sources of value creation change under an open innovation paradigm (Reed et al. 2012), an OIP would help develop value drivers to strengthen the strategic position of the corporation and therefore its ability to create value.

Value can be created from both incremental and radical innovation; however, the risk involved is different and corporations need to actively manage these different scenarios. Under the paradigm that we have just described it is common that corporations share and protect their innovations simultaneously, thus creating an R&D paradox (Bogers 2011); in this context corporations have a duty to both create and appropriate value. The essence of innovation is the renewal of the business in order to maintain its competitive advantage and enhance its ability to create value (Hax and Wilde 2003). Since the core of open innovation includes engagement, co-creation, and driving experience for value creation, the practices of these corporations are difficult for the competition to imitate (Lee et al. 2013), thus strengthening the corporation's competitive position.

We believe that the philosophy of value-based management can help to foster open innovation by providing corporations with a framework for decision making at all levels in a decentralized organization. In order to achieve this objective, less emphasis should be placed on the metrics and tight discipline that some value-based management programs implement. Corporations' heavy emphasis on efficiency determines a strong focus on existing businesses; corporations that can incorporate open innovation in their agendas would be in a better position to create wealth (Ketchen et al. 2008). We view it as important to recognize that the difference between *conquering* and *governing* can be applied to the corporate world through an alternative parallel of

creating and *managing*. An OIP is a portfolio of innovation initiatives, each with unique characteristics that require creating and managing simultaneously.

In terms of value creation, it is also relevant to mention that open innovation is key during turbulent market conditions (Schweitzer et al. 2011) and lean economic times (Chesbrough and Garman 2009), as exemplified by the case of Fiat during the downturn between 1993 and 2003 (Di Minin et al. 2010).

A framework of reference by way of a conclusion

Successful companies that manage innovation strategy choose a different approach from relying on one single stream of innovation (Ortt and Duin 2008). From a strategic perspective, the main objective of an OIP is to facilitate the development and growth of value drivers. The value drivers create new competitive advantages and a sustainable differentiation strategy and organization. There is a clear relationship between organizational structure and performance (Nisar et al. 2012). Over time, this situation ultimately leads to superior financial performance and hence value creation. As a conclusion for this research, we propose a general framework of reference for value creation within open innovation.

This framework identifies the main elements of an OIP that are capable of creating value drivers and have the aim of doing so. The value drivers studied may influence the corporation to develop a better strategy and organization to achieve superior financial performance and value creation for its shareholders.

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